



AGRICULTURAL LAND CLASSIFICATION SOUTH CERNEY

CLIENT: ACORN BIOENERGY LTD
PROJECT: SOUTH CERNEY
DATE: 28TH MAY 2026 – ISSUE 3
ISSUED BY: JAMES FULTON MRICS FAAV

CONTENTS

1. EXECUTIVE SUMMARY
2. INTRODUCTION
3. PUBLISHED INFORMATION
4. CLIMATE
5. STONINESS
6. GRADIENT
7. SOILS

INTERACTIVE FACTORS

8. WETNESS
9. DROUGHTINESS
10. AGRICULTURAL LAND CLASSIFICATION

APPENDIX 1 – DETAILS OF THE AUTHORS EXPERIENCE

APPENDIX 2 – PLAN OF SITE WITH SAMPLING POINTS

APPENDIX 3 – AGRO-CLIMATIC DATA

APPENDIX 4 – SURVEY DATA

APPENDIX 5 – DESCRIPTION OF AGRICULTURAL LAND CLASSIFICATION GRADES

APPENDIX 6 – MAP OF LAND GRADING

1. EXECUTIVE SUMMARY

- 1.1 This report assesses the Agricultural Land Classification (ALC) grading of 4.6Ha, of agricultural land at South Cerney.
- 1.2 The limiting factor found to be soil wetness, a combination of the climatic regime, soil water regime and texture of the top 25cm of the soil.
- 1.3 The land is graded as follows:

Grade 2:	0.9 Ha
Grade 3a:	0.9 Ha
Grade 3b:	2.8 Ha
- 1.4 Because the limiting factor on the lower grade land is wetness and due to the fragmented nature of the higher grade BMV land it is not possible to access the higher-grade land when it is too wet to access the subgrade 3b land. This means that the higher-grade areas cannot be farmed separately to the rest of the field effectively limiting the use of the whole field to that of the grade 3b area.
- 1.5 The grade found is substantially lower than the new predictive ALC map for England. Other full ALC data from nearby confirms that these areas shown as Grade 2 on the predictive map are actually Grade 3a and Grade 3b and we have found multiple areas in the country where the Predictive map for England has not been accurate when we have surveyed it.

2. INTRODUCTION

- 2.1 Amet Property Ltd have been instructed by Acorn Bioenergy Ltd to produce an Agricultural Land Classification (ALC) report on a 4.6-hectare site on land to the southwest of South Cerney. The ALC report is being prepared to accompany a planning application.
- 2.2 The report's author is James Fulton BSc (Hons) MRICS FAAV who has worked as a chartered surveyor, agricultural valuer, and agricultural consultant since 2004, has a degree in agriculture which included modules on soils and over 10 years' experience in advising farmers on soil structure and cultivation methods and in producing agricultural land classification reports. Additional information on authors experience is found at **appendix 1**.
- 2.3 The report is based on a site visit conducted by two surveyors during which the conditions were sunny, and topsoils were found to be dry with some moisture at depth.
- 2.4 During the inspection 1 trial pit was dug to a depth of 120cm. In addition to the trial pit an auger was used to take approximately one sample per hectare on the proposed development site to a depth of 120cm with smaller trial pits at some of these locations to confirm soil structure and colour where it was not clear from the auger samples. A plan of auger points and trial pit locations can be found at **appendix 2**. The trial pit locations were selected as they were representative of the soils found on site. Where subsoils were inspected with a spade, descriptions of structure have been recorded based on the soil survey field handbook¹; where an auger has been used the structure is described as good, moderate or poor based on figure 9,10 and 11 in the MAFF² guidance. Colours are described using Munsell Colours³.
- 2.5 The surveyed area extends to 4.6Ha of arable land spread across 1 field. The land is located to the southwest of South Cerney.
- 2.6 Further information has been obtained from the MAGIC website, the Soil Survey of England and Wales, the British Geological Survey, the Meteorological Office, the 1:250,000 series Agricultural Land Classification maps and the Predictive Agricultural Land Classification Map for England.
- 2.7 The collected information has been judged against the Ministry of Agriculture Fisheries and Food Agricultural Land Classification of England and Wales revised guidelines and criteria for grading the quality of agricultural land.

¹ Hodgson, JM (1997) Soil Survey Field Handbook

² MAFF (1988) - *Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land*. MAFF Publications

³ Munsell Color (2009) Munsell Soil Color Charts

- 2.8 The principal factors influencing agricultural production are climate, site and soil and the interaction between them MAFF (1988) & Natural England (2012)⁴.
- 2.9 The report is prepared and formatted considering the latest BSSS guidance⁵.

3. PUBLISHED INFORMATION

- 3.1 The British Geological Survey 1:50,000 scale map shows the bedrock geology to be Kellaways Clay Member – Mudstone.
- 3.2 The soils on the site are identified as being 572j Bursledon Association, deep fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging.
- 3.3 The 1:250,000 series Agricultural Land Classification maps show the land to be Grade 3. These plans are of strictly limited value, using an out-of-date methodology at a very small scale (low detail) level of survey. Further information on the limits of their use can be found in TIN049.
- 3.4 The new predictive agricultural land classification map for England predicts the site to be Grade 1.
- 3.5 The MAGIC 1:250,000 series Post 1988 Agricultural Land Classification maps show that the land has not yet been surveyed, however, land to the west and northwest of the site has been surveyed to be predominantly Grade 3b, with areas of Grade 3a. (These areas are shown on the predictive map to be Grade 2)

⁴ MAFF (1988) - *Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land*. MAFF Publications

Natural England (2012) - *Technical Information Note 049 - Agricultural Land Classification: protecting the best and most versatile agricultural land*, Second Edition

⁵ BSSS (2022) Working with Soil Guidance Note on Assessing Agricultural Land Classification Surveys in England and Wales

4. CLIMATE

- 4.1 Climate has a major, and in places overriding, influence on land quality affecting both the range of potential agricultural uses and the cost and level of production.
- 4.2 There is published agro-climatic data for England and Wales provided by the Meteorological Office, such data for the subject site is listed in the table below.

Agro-Climatic Data – Full details can be found at **appendix 3**

Grid Reference	404017,196210
Altitude (ALT)	98
Average Annual Rainfall (AAR)	755
Accumulated Temperature - Jan to June (ATO)	1417
Duration of Field Capacity (FCD)	172
Moisture Deficit Wheat	97
Moisture Deficit Potatoes	86

- 4.3 The main parameters used in assessing the climatic limitation are average annual rainfall (AAR), as a measure of overall wetness; and accumulated temperature (ATO), as a measure of the relative warmth of a locality.
- 4.4 The AAR and ATO provide climatic limitation to Grade 1.
- 4.5 The site is shown to be in flood zone 1 – areas with a less than 1 in 1000 annual chance of flooding. There was no evidence of flooding seen during the site visit and it is considered that will not result in a limitation to land grade.

5. STONINESS

- 5.1 The stones that were identified in the topsoil are not of sufficient size or quantity to limit land grade.

6. GRADIENT AND MICRORELIEF

- 6.1 The site is gently sloping with no gradient or microrelief that limits land grade.

7. SOILS

- 7.1 Full information on the sample points along with trial pit descriptions and photographs and lab test results can be found at **appendix 4**.
- 7.2 The soils found on site are fine loamy topsoils over slowly permeable subsoils as expected based on the soil type mapped in this area with the soils most closely matched to the Wickham Series within the Bursledon Association
- 7.3 The soils on site varied quite significantly over very short distances with soils between survey points consistently changing between quite heavy sandy clay loam and sandy loam with occasional areas that were heavier still and recorded as heavy clay loam. The topsoil was recorded at the various survey points to be olive brown (2.5Y 4/3 or 4/4) or dark yellowish brown (10YR 4/4 or 4/6) sandy loam, sandy clay loam or a heavy clay loam.
- 7.4 The upper subsoils were recorded as predominantly sandy clay loam with survey point one having a notably heavier subsoil recorded as being clay. The colours were found to be greyish brown (2.5Y 5/2), light olive brown (2.5Y 5/6) or bluish grey (10B 6/1). The subsoil had a moderate structure and few to many ochreous mottles. In some cases, the upper subsoil was gleyed but was not usually slowly permeable.
- 7.5 Where a second subsoil was found the texture was found to be sandy clay loam or clay. The colours were found to be grey (10YR 6/1) or greenish grey (10Y 6/1). The subsoil had a moderate or poor structure and many ochreous mottles. It was always recorded as both gleyed and slowly permeable.

INTERACTIVE FACTORS

8. WETNESS

- 8.1 An assessment of the wetness class of each sample point was made based on the flow chart at Figure 6 and the graphs at figure 7 and 8 in the MAFF guidance.

Wetness class Assessment

Depth to gley	Depth to SPL	Coarse subsoil	Wetness Class
No gley	No SPL	N/A	I
40-70	No SPL	Yes	I
<40	No SPL	Yes	I
<40	No SPL	No	II
40-70	No SPL	No	I
40-70	>61	N/A	II
40-70	<61	N/A	III
<40	>75	N/A	II
<40	47-75	N/A	III
<40	<47	N/A	IV

- 8.2 The wetness class and topsoil texture were then assessed against Table 6 of the MAFF guidance to determine the ALC grade according to wetness. The wetness assessment can be found at **appendix 4**.
- 8.3 Wetness is found to be the limiting factor across the site limiting areas to between grade 2 and grade 3b.

9. DROUGHTINESS

- 9.1 Droughtiness limits are defined in terms of moisture balance for wheat and potatoes using the formula:

$$MB \text{ (Wheat)} = AP \text{ (Wheat)} - MD \text{ (Wheat)}$$

and

$$MB \text{ (Potatoes)} = AP \text{ (Potatoes)} - MD \text{ (Potatoes)}$$

Where:

MB = Moisture Balance

AP = Crop Adjusted available water capacity

MD = Moisture deficit

- 9.2 Moisture deficit for wheat and potatoes can be found in the agro-climatic data and are as follows:

$$MD \text{ (Wheat)} = 97$$

$$MD \text{ (Potatoes)} = 86$$

- 9.3 Crop adjusted available water is calculated by reference to the total available water and easily available water which is calculated by reference to soil texture and structural condition and the stone content.
- 9.4 The moisture balance was calculated for all survey points, and this assessment can be found at **appendix 4**.
- 9.5 Droughtiness does not limit the grade of the site.

10. AGRICULTURAL LAND CLASSIFICATION

- 10.1 The Agricultural Land Classification provides a framework for classifying land according to which its physical or chemical characteristics impose long-term limitations on agricultural use. The limitations can operate in one or more of four principle ways: they may affect the range of crops that can be grown, the level of yield, the consistency of yield and the cost of obtaining it.
- 10.2 The principle physical factors influencing agricultural production are climate, site and soil and the interactions between them which together form the basis for classifying land into one of 5 grades; grade 1 being of excellent quality and grade 5 being land of very poor quality. Grade 3 land, which constitutes approximately half of all agricultural land in the United Kingdom is divided into 2 subgrades – 3a and 3b. A full definition of all of the grades can be found at **appendix 5**.
- 10.3 This assessment sets out that the site is limited by wetness.
- 10.4 The breakdown of land by classification is:
- | | |
|-----------|--------|
| Grade 2: | 0.9 Ha |
| Grade 3a: | 0.9 Ha |
| Grade 3b: | 2.8 Ha |
- 10.5 A plan of the land grading can be found at **appendix 6**.
- 10.6 Because the limiting factor on the lower grade land is wetness and due to the fragmented nature of the higher grade BMV land it is not possible to access the higher-grade land when it is too wet to access the subgrade 3b land. This means that the higher-grade areas cannot be farmed separately to the rest of the field effectively limiting the use of the whole field to that of the grade 3b area.
- 10.7 The results are surprising given that the predictive ALC map for England predicts that the site is grade 1. Given the soil type mapping describes this area as fine loamy soils with slowly permeable subsoils and climate data estimating 172 field capacity days it is unclear to us how this land could all be grade 1 as wetness class II, III and IV would result in fine loamy soils being between grade 1 and grade 3b with 3a being the most likely (as per the old 1:250,000 scale predictive maps)
- 10.8 In order to check the outcome of our assessment against the farming history of the field we have checked our mapping against yield data provided by the landowner. This yield data can be found at **appendix 7** and confirms that yields are very poor and that the poor state of the crop this year is not unusual. The data shows that the average yield on this land runs at between a 20% and 40% reduction compared to national averages.

- 10.9 A photograph of this years poor crop and google earth images from previous years showing poorly established areas are all at **appendix 7**. The aerial photography from previous yeas shows the areas of worst establishment to be in the areas shown in this report as grade 3b.

Appendix 1 – Details of the Authors Experience

James Fulton

Professional Education and Qualifications

BSc (Hons) Agriculture, University of Nottingham (2004)

Member of the Royal Institution of Chartered Surveyors (MRICS) (2008)

Fellow of the Central Association of Agricultural Valuers (FAAV) (2009)

Relevant Work Experience

While working for a regional firm from 2004 until 2016 as part of my work I provided advice to farmers on soils, cultivation techniques and cropping and was involved in field trials which assessed cropping and cultivation techniques and how they impacted soil structure. At the same time I worked alongside an experienced surveyor who produced Agricultural Land Classification reports and I received training in field survey techniques and the ALC process to the point where I was able to produce ALC reports.

In 2016 I left my employer and formed Amet Property Ltd providing development consultancy and other rural practice surveying services. Of all of the services that we provide Agricultural Land Classification reports is the single largest area of work accounting for approximately 70% of all of my working time.

While I am not a member of the BSSS I meet the minimum competencies set out by the BSSS in Document 1 *Foundation skills in field soil investigation, description and interpretation* and Document 2 *Agricultural Land Classification (England and Wales)*

Professional Standards

As a member of the Royal Institution of Chartered Surveyors and Fellow of the Central Association of Agricultural Valuers I am bound by their professional standards and am only able to carry out work where I am suitably qualified and experienced to do so. Due to the formal and practical training that I have received I am able to competently produce Agricultural Land Classification reports.

Assistant Surveyors

All assistant surveyors have completed the BSSS working with soil course and have been trained to meet the requirements of BSSS Document 1 *Foundation skills in field soil investigation, description, and interpretation*.



Appendix 3 – Climatic Data

Site Details: South Cerney

Grid reference (centre of site): 404017,196210

Altitude: Mean 98.17 AOD

Climatic data from surrounding locations:

Grid Reference	ALT	AAR	LR_AAR	ASR	ATO	ATS	MDW	MDP	FCD
40001950	93	778	1.5	385	1424	2360	95	84	177
40002000	117	830	1	390	1394	2326	91	79	188
40501950	84	723	1.7	360	1433	2372	101	91	166
40502000	114	768	1.1	380	1397	2332	94	82	178

Altitude Adjusted:

Grid Reference	AAR	ATO	FCD	MDW	MDP	Proximity Adjustment
40001950	785.76	1418.11	178.12	93.93	82.59	10.03%
40002000	811.17	1415.47	185.28	94.25	83.27	5.79%
40501950	747.09	1416.85	169.48	97.86	86.89	72.66%
40502000	750.59	1415.05	175.48	96.84	85.73	11.52%

Appendix 4a - Sample Point Assessment

		Topsoil				Stoniness				Upper Subsoil				Lower Subsoil				Wetness Assessment				Grade		Droughtiness Assessment		Grade		Most						
Sample No	Altitude	Depth	Texture	Calc	Colour	<2cm	2-6cm	>6cm	Mottles	Depth	Texture	Calc	Colour	Stoniness	Mottles	Structure	Depth	Texture	Calc	Colour	Stoniness	Mottles	Structure	Gleyed	SPL	Wetness	Wetness	Wetness	Wheat	Potato	Droughtiness	Grade	limit by	limiting
1	101	0 - 30	SCL		10YR 4 / 6					30 - 120	C		10B 6 / 1		FO VMO	Poor	60 - 120				10YR 6 / 1		MO	Moderate	30	30	IV	3b	28.86	16.88	2		3b	
2	101	0 - 35	fSL		10YR 4 / 6					35 - 60	SCL		2.5Y 5 / 6		FO	Moderate	60 - 120	SCL			10YR 6 / 1		MO	Moderate	60	60	III	2	58.36	29.38	1		2	
3	98	0 - 30	SCL		10YR 4 / 4					30 - 50	SCL		2.5Y 5 / 6		FO	Moderate	50 - 120	SCL			10YR 6 / 1		MO	Moderate	50	50	III	3a	53.86	24.88	1		3a	
4	100	0 - 35	fSL		10YR 4 / 6					35 - 60	SCL		2.5Y 5 / 6		FO	Moderate	60 - 120	SCL			10YR 6 / 1		MO	Moderate	60	60	III	2	58.36	29.38	1		2	
5	96	0 - 25	HCL		2.5Y 4 / 3				CO	25 - 55	SCL		2.5Y 5 / 2		MO	Moderate	55 - 120	C			10Y 6 / 1		MO	Poor	25	55	III	3b	35.86	23.38	1		3b	
6	93	0 - 25	SCL		2.5Y 4 / 4				CO	25 - 50	SCL		2.5Y 5 / 2		MO	Moderate	50 - 120	C			10Y 6 / 1		MO	Poor	25	50	III	3a	31.86	19.88	1		3a	
98.17																																		

Appendix 4b – Trial Pit Descriptions

Sample Point No. 5		
Horizon 1	0-25cm Olive brown (2.5Y 4/3) heavy clay loam, with common ochreous mottles.	
Horizon 2	25-50cm Greyish brown (2.5Y 5/2) sandy clay loam with a medium subangular blocky structure, friable consistence and many ochreous mottles.	
Horizon 3	50-120cm Greenish grey (10Y 6/1) heavy clay loam with a massive structure, firm consistence and many ochreous mottles.	
Pictures		
Horizon 1	Horizon 2	Horizon 3
		
Slowly permeable layer	Starts at 50cm – evidenced by friable medium subangular blocky structure with less than 0.5% biopores >0.5mm.	
Gleying	Starts at 25cm evidenced by greyish colours dominant in the matrix and at least 2% ochreous mottles.	
Wetness Class	III	
Wetness limitation	3b	
MB Wheat	38.36	
MB potatoes	25.88	
Droughtiness Limitation	1	

Appendix 4b – Site Photos



Survey Point 1 – Core Photo



Survey Point 2 – Core Photo

ANALYTICAL REPORT

Report Number	51832-26	W250	AMET PROPERTY
Date Received	05-MAY-2026		HENWICK BARN
Date Reported	19-MAY-2026		BULWICK
Project	SOIL		CORBY
Reference	SOUTH CERNEY		NORTHANTS
Order Number			NN17 3DU

Laboratory Reference	SOIL794879										
Sample Reference	SOUTH CERNEY										
Determinand	Unit	SOIL									
Coarse Sand 2.00-0.63mm	% w/w	1									
Medium Sand 0.63-0.212mm	% w/w	23									
Fine Sand 0.212-0.063mm	% w/w	52									
Silt 0.063-0.002mm	% w/w	12									
Clay <0.002mm	% w/w	12									
Textural Class **		fSL									

Notes

Analysis Notes	The sample submitted was of adequate size to complete all analysis requested. The results as reported relate only to the item(s) submitted for testing. The results are presented on a dry matter basis unless otherwise stipulated.
Document Control	This test report shall not be reproduced, except in full, without the written approval of the laboratory.

Reported by	** Please see the attached document for the definition of textural classes. <i>Teresa Clyne</i> Natural Resource Management, a trading division of Cawood Scientific Ltd. Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS Tel: 01344 886338 Fax: 01344 890972 email: enquiries@nrm.uk.com
-------------	--

ADAS (UK) Textural Class Abbreviations

The texture classes are denoted by the following abbreviations:

Class	Code
Sand	S
Loamy sand	LS
Sandy loam	SL
Sandy Silt loam	SZL
Silt loam	ZL
Sandy clay loam	SCL
Clay loam	CL
Silt clay loam	ZCL
Clay	C
Silty clay	ZC
Sandy clay	SC

For the *sand*, *loamy sand*, *sandy loam* and *sandy silt loam* classes the predominant size of sand fraction may be indicated by the use of prefixes, thus:

vf	Very Fine (more than 2/3's of sand less than 0.106 mm)
f	Fine (more than 2/3's of sand less than 0.212 mm)
c	Coarse (more than 1/3 of sand greater than 0.6 mm)
m	Medium (less than 2/3's fine sand and less than 1/3 coarse sand).

The subdivisions of *clay loam* and *silty clay loam* classes according to clay content are indicated as follows:

M	medium (less than 27% clay)
H	heavy (27-35% clay)

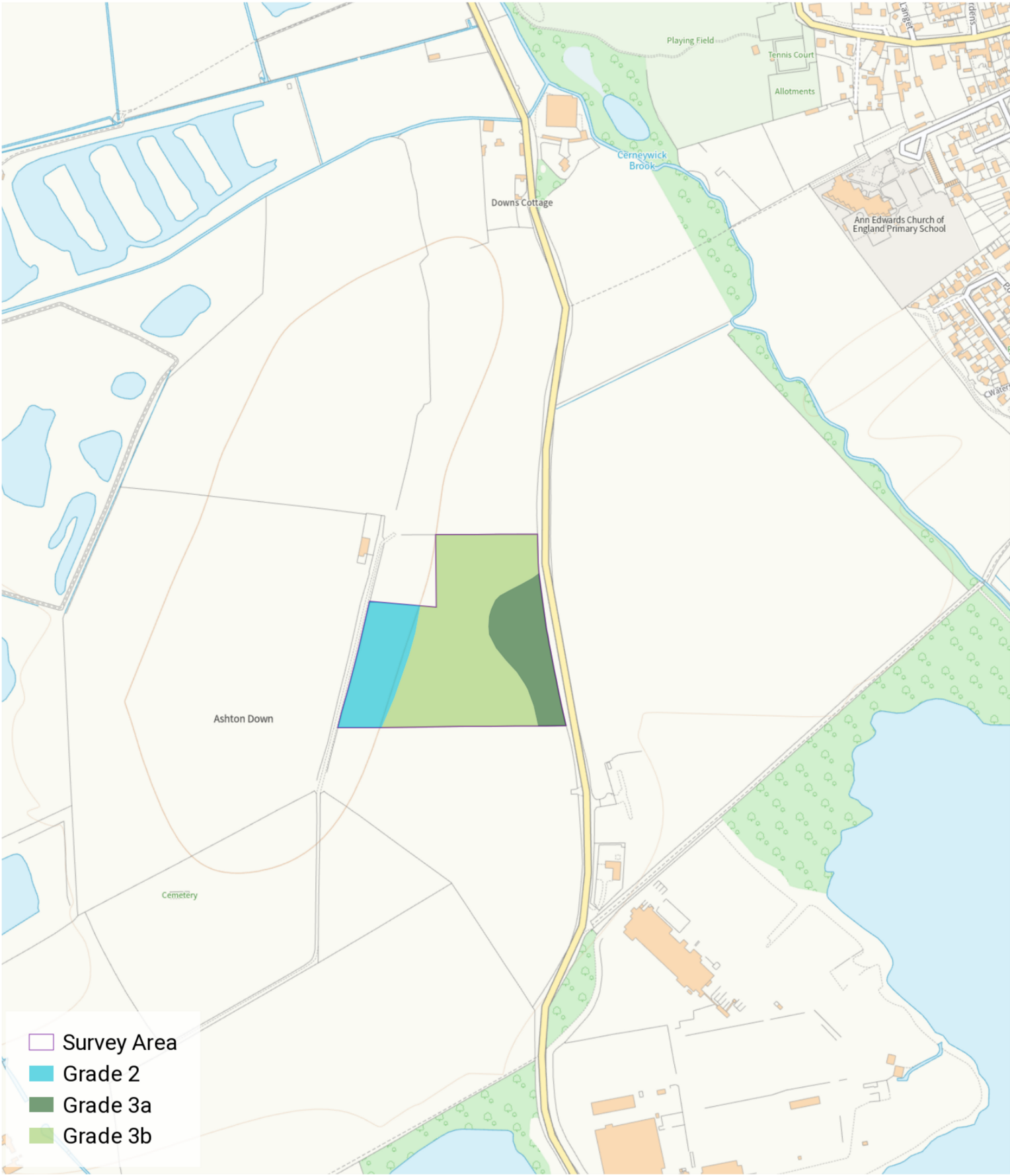
Organic soils i.e. those with an organic matter greater than 10% will be preceded with a letter O.

Peaty soils i.e. those with an organic matter greater than 20% will be preceded with a letter P.

APPENDIX 5 - DESCRIPTION OF ALC GRADES

- Grade 1 - excellent quality agricultural land Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.
- Grade 2 - very good quality agricultural land Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.
- Grade 3 - good to moderate quality agricultural land Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.
- Subgrade 3a - good quality agricultural land Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.
- Subgrade 3b - moderate quality agricultural land Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.
- Grade 4 - poor quality agricultural land Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.
- Grade 5 - very poor-quality agricultural land Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

Appendix 6 - Map of
ALC Grade



Appendix 7 – Cropping data

	Crop	Yield/Ha	Average yield for that crop in that year	Percentage variation of yield achieved to the average for that crop in that year
2025	S Barley	3.57	Not Available	
2024	W Wheat	5.54	7.3	-24%
2023	OSR	1.07	3.1	-65%
2022	S Barley	3.93	6.6	-41%
2021	W Wheat	1.79	8.6	-79%
2020	OSR	1.04	2.7	-61%
2019	W Barley	6.79	6.9	-1%
2018	W Wheat	7.86	7.8	+1%
2017	OSR	1.43	3.9	-63%
2016	W Wheat	8.21	7.9	+4%
2015	W Wheat	8.73	9.0	-3%

For Entrance Field

And AD plant Field

	Crop	Yield/Ha	Average yield for that crop in that year	Percentage variation of yield achieved to the average for that crop in that year
2025	S Barley	None	Not Available	-
2024	W Wheat	None	7.3	- 100%
2023	S Barley	3.46	8.1	-67%
2022	S Barley	4.81	6.6	-27%
2021	W Wheat	7.88	8.6	- 8%
2020	OSR	1.15	2.7	-67%
2019	W Barley	5.77	6.9	-16%
2018	W Wheat	6.15	7.8	-22%
2017	OSR	2.31	3.9	-40%
2016	W Wheat	4.62	7.9	-41%
2015	W Wheat	6.92	9.0	-25%

Photograph of this year's poor wheat crop (May 2026)



Google earth image from 2023

